URS

August 23, 2001

Mr. Doug Bauer
Alaska Department of Environmental Conservation
Contaminated Sites Remediation Program
610 University Ave
Fairbanks, Alaska 99709-3643

Supplemental Investigation and Corrective Action Plan
NC Machinery Facility
730 Old Steese Highway, Fairbanks, Alaska
File #102.26.055, Facility #613
URS Job No. 53-26450002.00

Dear Mr. Bauer:

1.0 INTRODUCTION

On behalf of Skinner Corporation, we are providing this Supplemental Investigation and Corrective Action Plan for the NC Machinery facility at 730 Old Steese Highway in Fairbanks, Alaska (the "Site") (Figure 1). In1991 and 1994, Skinner performed an investigation and removal of an underground storage tank (UST) and dry wells at the Site. Since that work, Skinner has been monitoring the natural biodegradation of the residual petroleum hydrocarbons and volatile organic compounds (VOCs) in the area of former dry well (DW-1) and UST No. 7 (Figure 2). This proposed Supplemental Investigation and Corrective Action Plan was prepared to address these residual contaminants.

In preparation for development of this work plan, URS reviewed the prior investigation, remediation and groundwater monitoring documents for the Site including the following:

- Dames and Moore, June 28, 1995 "Final Report UST Site Assessment/Release Investigation and Corrective Action, NC Machinery".
- Dames and Moore, November 18, 1996 "Quarterly Groundwater Monitoring July and October 1996, NC Machinery".
- Dames and Moore, October 14, 1997 " Quarterly Groundwater Monitoring February and April 1997".

These reports were previously provided to the ADEC case manager, Mr. Mehrdad Nadem, whom we understand is no longer working for ADEC. We are directing this submission to you because we understand that you are the new case manager assigned to this file.

URS Corporation
Century Square
1501 4th Avenue, Suite 1400
Seattle, WA 98101-1616
Tel: 206.438.2700
Fax: 206.438.2699

This proposed supplemental investigation and corrective action plan is intended to address the residual diesel and oil range petroleum hydrocarbons in soil and groundwater. In brief, Skinner Corporation is planning to undertake certain additional investigations of the extent of residual petroleum hydrocarbons and implement in situ chemical oxidation to further remediate hydrocarbons.

2.0 SUMMARY OF PRIOR CORRECTIVE ACTION

2.1 SITE BACKGROUND

The Fairbanks facility occupies approximately 5 acres and consists of three (3) main buildings: Main Service Shop Building, Warehouse Building No.1, and Warehouse Building No.2 (Figure 2). In addition, there are three (3) outdoor covered storage areas located on the western portion of the property and two relatively small storage sheds located on the north and south portions of the property. Land use in the Site vicinity is mixed commercial and light industrial. The Main Service Shop Building is located in the eastern portion of the Site and is divided into three main work areas: an office space, a parts storage and service counter, and the Main Service Shop with service bays. The interior floor drains in the Main Service Shop were previously designed to direct water and other liquids generated during daily operations to three sediment settling sumps and the liquids were then directed to a former dry well (DW-1) located north of building (Figure 2).

2.2 REMOVAL OF DRY WELL (DW-1)

In 1994, a corrective action was implemented to remove petroleum-affected soils surrounding an inactive dry well referred to as DW-1. Borings were drilled in the area of the dry well to assess the extent of petroleum hydrocarbons in the soil. The boring locations are shown on Figure 2. Approximately 485 cubic yards of petroleum affected soil were removed.

During the soil removal activities, petroleum affected soil in the eastern portion of the excavation appeared to be limited to a thin zone of soil near the groundwater interface at approximately 15 feet bgs (Figure 2). This limited zone of petroleum affected soil on the east wall of the excavation was removed up to soil boring B-11. The sample results for B-11 indicated that oil and diesel range petroleum hydrocarbons were detected only in the sample collected at 15 feet bgs which is at the soil/water interface. Oil and diesel range petroleum hydrocarbons were not detected in boring B-8 that was completed approximately 10 feet east of boring B-11 (Figure 2).

The results of samples collected from B-8 and B-11 and the observation made during excavation indicated that a "thin" layer of petroleum affected soil was present at 15 feet bgs and was limited in lateral extent. Further excavation was not conducted east of boring B-11 due to the small volume of the petroleum affected soil, its

location beneath approximately 14 feet of clean soil and an 8-inch thick concrete-covered ground surface. Approximately 15 cubic yards of petroleum affected soil above the ADEC Level B cleanup level was estmated to remain in this area (Figure 3). Removal of UST No. 7.

2.3 REMOVAL OF UST NO. 7

In 1991, the former waste oil UST (Tank No. 7) located west of the Main Shop Building was removed by NC personnel (Figure 2). The UST removal and subsequent investigation was documented in a report prepared by NC entitled "Site Assessment Report, Release Investigation Report and Interim Corrective Action Report for Used Oil UST Removal" dated November 11, 1992. VOC and petroleum hydrocarbon affected soils were encountered during UST removal. The apparent source of the release was leakage from the piping between the UST and the Main Shop building.

The remedial actions included excavating the affected soils as close to the Main Shop building as was feasible without undermining the building foundation. Concentrations of oil range petroleum hydrocarbons were detected along the east wall adjacent to the building which exceeded cleanup levels.

ADEC subsequently requested that NC perform an additional assessment to further assess the presence of VOCs in soil and groundwater and the lateral extent of petroleum hydrocarbons beneath the building foundation along the east wall of the excavation. Three monitoring wells (MW-1, MW-2, and MW-3) were installed by NC and additional soil and groundwater samples were collected in fall of 1992. Groundwater samples collected from MW-1 in the area of former Tank 7 excavation detected oil range petroleum hydrocarbons, 1,1,1-trichloroethane (TCA), trichloroethylene (TCE) and tetrachloroethylene (PCE) in groundwater. These constituents were not detected in wells MW-2 and MW-3.

After installation of the monitoring wells and the sampling activities, a work plan was prepared to further assess the extent of used oil and VOCs. ADEC approved this work plan during a meeting on November 17, 1992. In accordance with the approved plan, additional soil borings were drilled and one additional monitoring well (MW-4) was installed. VOCs and petroleum hydrocarbons were not detected in the soil borings located east and southwest of the former tank excavation. Petroleum hydrocarbon concentrations below the ADEC B cleanup levels (ranging from 15 to 100 mg/kg) were detected in soil samples collected below the base of the Tank 7 excavation (Dames and Moore, 1995).

Based on these results and previous post-excavation soil samples collected in 1992, a limited amount of soil containing petroleum hydrocarbon at levels above the ADEC B cleanup levels remain at the base of the former Tank 7. A limited amount of petroleum hydrocarbon affected soil above the relevant ADEC cleanup standard

is also present beneath the building foundation, east of the former excavation. NC personnel estimated approximately 10 cubic yards of petroleum affected soil associated with former Tank No. 7 was left in place. The petroleum affected soil located beneath the adjacent building appears to extend to approximately 20 feet bgs. The soil was left in place due to access limitations and the potential to impact building structural integrity.

2.4 PREVIOUS GROUNDWATER MONITORING

The shallow groundwater quality beneath the property has been monitored since 1993. Based on the early groundwater monitoring data, it was apparent that the shallow groundwater at the Site has been affected by diesel and oil-range petroleum hydrocarbons (DRPH) in the immediate vicinity of Tank No. 7 (MW-1 and MW-4) and former dry well (MW-6). BTEX and chlorinated volatile organic compounds (VOCs) above the ADEC Table C cleanup levels were also detected in MW-6.

The previous groundwater monitoring results are summarized in Tables 1 and 2. The groundwater was recently sampled in January 2001 and elevated levels of diesel range petroleum hydrocarbon are still present in the groundwater at MW-1 (6.3 mg/l) and MW-6 (46.8 mg/l). Oil range petroleum hydrocarbon (35.6 mg/l) and PCE (22.8 ug/l) were also detected in the groundwater at MW-6 above the Table C cleanup levels.

Since the concentrations of these compounds remain above the Table C cleanup levels, further remedial action will be implemented as outlined in the following sections.

3.0 OBJECTIVES AND SCOPE OF FURTHER REMEDIAL ACTION

Based upon the groundwater monitoring and prior remedial actions performed at the Site, it appears that a small quantity of source material is present in the "smear zone" of the groundwater table in the area of the former dry well (DW-1) and former Tank No. 7. The objectives of the corrective action will be to treat the soils and groundwater affected by the diesel and oil-range petroleum hydrocarbon and PCE within the "smear zone" by in situ chemical oxidation.

3.1 OVERVIEW OF IN SITU CHEMOCAL OXIDATION

In situ chemical oxidation involves the injection of hydrogen peroxide to oxidize contaminants in the subsurface and break down their chemical composition. The oxidation process breaks down contaminant compounds and ultimately results in mineralizing the compounds. The oxidation process is exothermic. The heat generated during the exothermic oxidation reaction is also beneficial to the remedial process because it will heat the subsurface soil which further enhances volatilization. The oxygen content in the groundwater is also increased which can further stimulate in situ biodegradation.

The chemical oxidation process is related to Fenton's Reaction, whereby the hydrogen peroxide reacts with ferrous iron in the soils to produce a hydroxyl free radical. This free radical is capable of oxidizing organic constituents in the groundwater and saturated soils within the treatment area. URS will retain Terra Vac to perform the chemical oxidation bench scale and pilot studies, remedial design and implementation of the in situ treatment of the soil and groundwater.

3.2 PRE-FIELD ACTIVITIES AND PLANNING DOCUMENTS

The following activities will be completed prior to performing remedial action fieldwork.

3.2.1 Health and Safety Plan and Utility Clearance

In accordance with Occupational Health and Safety Administration regulations, URS will modify the existing Site specific Health and Safety plan to include all tasks in this plan to be performed during Site work. Terra Vac will also prepare a Health and Safety plan to cover the remedial tasks concerning the hydrogen peroxide application. Prior to beginning fieldwork, URS will contact the call locate center to alert local utilities of the planned well installation and will coordinate with onsite NC personnel.

3.2.2 Supplemental Investigation

Prior to conducting the in situ chemical oxidation remediation, additional soil and groundwater characterization will be conducted to assess:

1. The area of residual diesel and oil range petroleum hydrocarbons in the soil; and

2. The extent of petroleum hydrocarbons remaining in the groundwater downgradient of the former dry well and Tank No. 7.

The supplemental investigation is outlined below.

Soil borings will be drilled in the vicinity of former dry well, DW-1, and Tank No.7 using a truck-mounted hollow stem auger drill rig. A licensed well drilling contractor will be retained to perform the drilling services. The proposed locations of the borings are shown on Figure 3. Based on existing groundwater level data from monitoring well MW-1, 2, 4 and 6, and the depth of soil contamination noted during the previous dry well and tank removal, the borings are expected to be completed to depths ranging from approximately 17 feet to 20 feet bgs.

Soil samples will generally be collected continuously from five feet in depth to the total depth of the boring. The samples will be screened using a photoionization detector (PID) and the results will be recorded on a log prepared for each boring by a URS geologist. One soil sample will be selected from each boring for chemical analysis based on the field screening results. Groundwater samples will be collected from selected borings using GeoProbe sampling techniques or an equivalent method. The groundwater samples will be collected by retracting the GeoProbe sampler screen two feet within the top of the saturated zone.

The soil and groundwater samples will be analyzed for DRO by AK 102, RRO by AK103 and VOCs by EPA Method 8260B at the former dry well location. Soil and groundwater samples in the former UST area will be analysed for DRO and RRO. A selected number of soil samples will also be analyzed for total organic carbon (TOC) and pH, and groundwater samples for total iron and ferrous iron to assist in the remedial system desig. A selected number of groundwater samples will also be analyzed for chemical oxygen demand (COD) and field testing for dissolved oxygen (DO), pH, conductivity and oxidation reduction potential (ORP) will be conducted. The samples will be placed in the appropriate laboratory-supplied containers and labeled with the sample number, depth, time, date of collection, collector's name, and requested laboratory analyses. The soil samples will be placed in an ice chest cooled with blue ice and delivered to an ADEC approved laboratory under standard chain of custody procedures. Soil samples selected for the bench scale study described in Section 3.2.3 will be shipped to Terra Vac's Windsor, NJ laboratory.

Drilling equipment will be decontaminated between each boring with a steam cleaner. All sampling equipment will be decontaminated by washing in an Alconox detergent then rinsed with tap water and double rinsed with deionized water between each sample. All soil cuttings will be placed in 55-gallon drums and stored onsite for disposal pending the soil remedial excavation activities.

3.2.3 In Situ Chemical Oxidation Bench Scale and Pilot Studies

After the supplemental investigation work is completed, soil samples will be provided to Terra Vac for a bench scale study to assess the efficacy of the in situ chemical oxidation technology prior to the full-scale implementation. Terra Vac will also perform a pilot study of the in situ chemical process. The purpose of the bench scale and pilot studies will be to collect the necessary information regarding the reaction rates and radius of influence of the hydrogen peroxide injections. This information will be used to develop the full scale design of the remedial system. The scope of the pilot study is outlined in the Terra Vac "Pilot Study and Full Scale Design Proposal" provided in Appendix A. The proposed pilot study injection wells will be installed during the mobilization for the supplemental investigation drilling program.

3.3 IN SITU CHEMICAL OXIDATION

The preliminary remedial design consists of a total of 20 injection wells installed within in the areas containing elevated levels of diesel and oil range petroleum hydrocarbons in the smear zone and dissolved phase hydrocarbon zone. The final remedial design will be prepared based upon the supplemental investigation and pilot study results. The proposed design, system construction and installation and operation of the in situ chemical oxidation system is outlined in Terra Vac's design proposal provided in Appendix A. A qualified scientist will be on-site during the installation of the remedial system.

A selected number of the injection wells will have their elevations surveyed by a licensed surveyor to assist in groundwater flow measurements at the Site. The injection well will be developed within 24-hours after installation by removing a minimum of five well casing volumes of groundwater using a disposable Teflon bailer. During development, water quality parameters (pH, temperature, dissolved oxygen (DO) and conductivity) will be measured and recorded.

3.4 LONG TERM GROUNDWATER MONITORING

In order to assess the effectiveness of this additional corrective action, URS will conduct quarterly groundwater monitoring. Five of the existing monitoring wells (MW-1, 3, 4, 6, and 7) will be sampled on a quarterly basis during the treatment period.

The groundwater sampling will be conducted in general conformance with the procedures outlined in ADEC's "Guidance for Cleanup of Petroleum Contaminated Sites" dated September 2000. Groundwater samples will be collected using a disposable Teflon bailer. Prior to sample collection, the depth to groundwater will be measured to the nearest 0.01-foot using a water level indicator. The monitoring well will be purged by removing a minimum of three well volumes. Water quality parameters (pH, temperature, DO, and conductivity) will be measured and recorded for each well. The water samples will be analyzed for DRO, RRO and VOCs. Each sample will be placed in the appropriate laboratory-supplied container and labeled with the sample number, depth, time, date of collection, collector's name, and requested laboratory analyses. The water samples will be placed in an ice chest cooled with blue ice and delivered to an ADEC certified laboratory under standard chain of custody procedures. Purge water will be combined with development water, contained in a steel 55-gallon drum and stored onsite, and disposed of following receipt of analytical results.

When the "rebound testing" described in Appendix A indicates that the groundwater cleanup has been achieved, or contaminant levels have shown a significant and steady decline, the necessity for further long-term monitoring and Site closure will be discussed with ADEC. We expect that the corrective action will reduce the petroleum and VOC concentrations in the former dry well and petroleum levels at former UST No. 7 to

below ADEC Table C levels. The outer edge of the impacted groundwater zone will likely meet ADEC cleanup levels under the ADEC 10X Rule.

3.5 REPORTING

A letter report will be prepared summarizing the results of the supplemental investigation and pilot study prior to the installation of the full scale system. The letter report will outline the fieldwork completed and the results of the soil and groundwater sampling and analyses. The report will include a Site plan depicting the areas of residual soil contamination and the extent of groundwater contamination. The installation of the full scale corrective action in situ chemical oxidation will proceed based upon the results of the supplemental investigation and pilot study.

A cleanup action final report (CAFR) will be prepared following the implementation of the remedial measures. The report format will be in general conformance with ADEC's "Handbook for Conducting Cleanups of Contaminated Sites and Regulated UST under the Voluntary Cleanup Program" dated March 2000. Subsequent to submission of this report and meeting applicable cleanup levels, Skinner Corporation will request a Site closure letter from ADEC.

4.0 SCHEDULE

The pre-field activities and tasks will be initiated immediately following ADEC's approval of this work plan so that the remedial action may begin as early as September 2001. The investigation and pilot study will require two to three field days and the analytical data will be available for review within two weeks of submitting the soil and groundwater samples. URS will provide the supplemental investigation letter report within two weeks of receipt of all analytical data. A draft CAFR will be prepared within two weeks of receipt of the last round of quarterly groundwater sampling.

To facilitate review and implementation of this proposal, URS suggests the following schedule:

URS PROPOSAL SUBMITTED:	August 23, 2001
ADEC COMMENTS OR APPROVAL:	August 31, 2001
URS REVISED PROPOSAL (if necessary)	September 6, 2001
FINAL ADEC APPROVAL	September 7, 2001
INTIATION OF FIELD ACTIVITIES	September, 2001
INTERIM & FINAL REPORTING	Per Corrective Action Plan

We will contact you within the next several days to discuss the proposed schedule and additional remedial actions. We are available to meet with you at your convenience to discuss the plan. In the interim, please do not hesitate to contact us if you have any questions at (206) 438-2284.

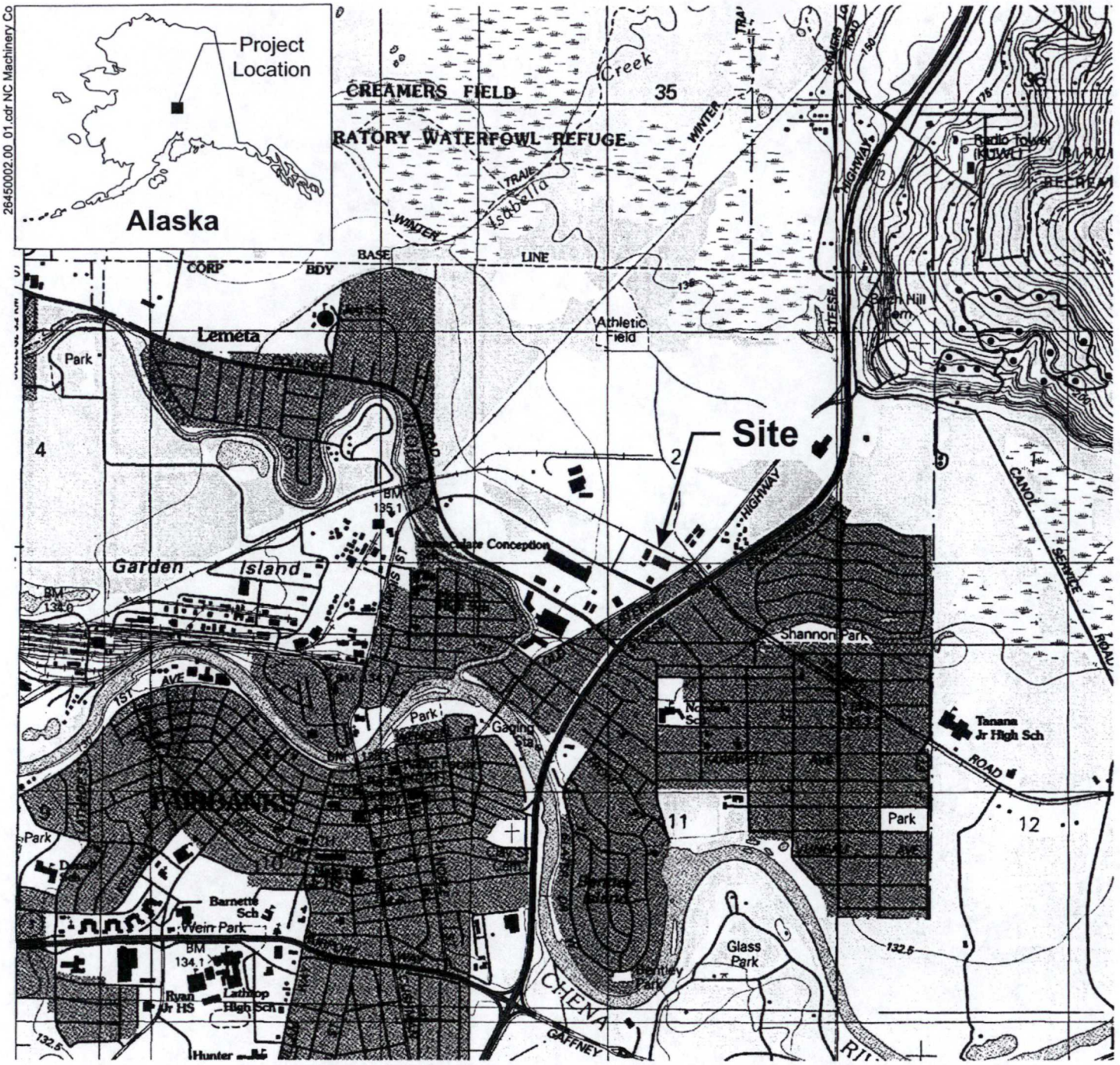
Sincerely,

URS CORPORATION

David Raubvogel
Senior Geologist

Attachments: Figures 1, 2 and 3
Tables 1 and 2
Appendix A – Terra Vac Pilot Study and Full Scale Proposal

Copy John Houlihan, Paul Dworian, Victoria Childs



Map created with TOPO!™ © 1997 Wildflower Productions, www.topo.com, based on USGS topographic map

0 0.5 1.0

Approximate Scale in Miles

Figure 1

Site Location Map

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NC Machinery Co.
Fairbanks, Alaska

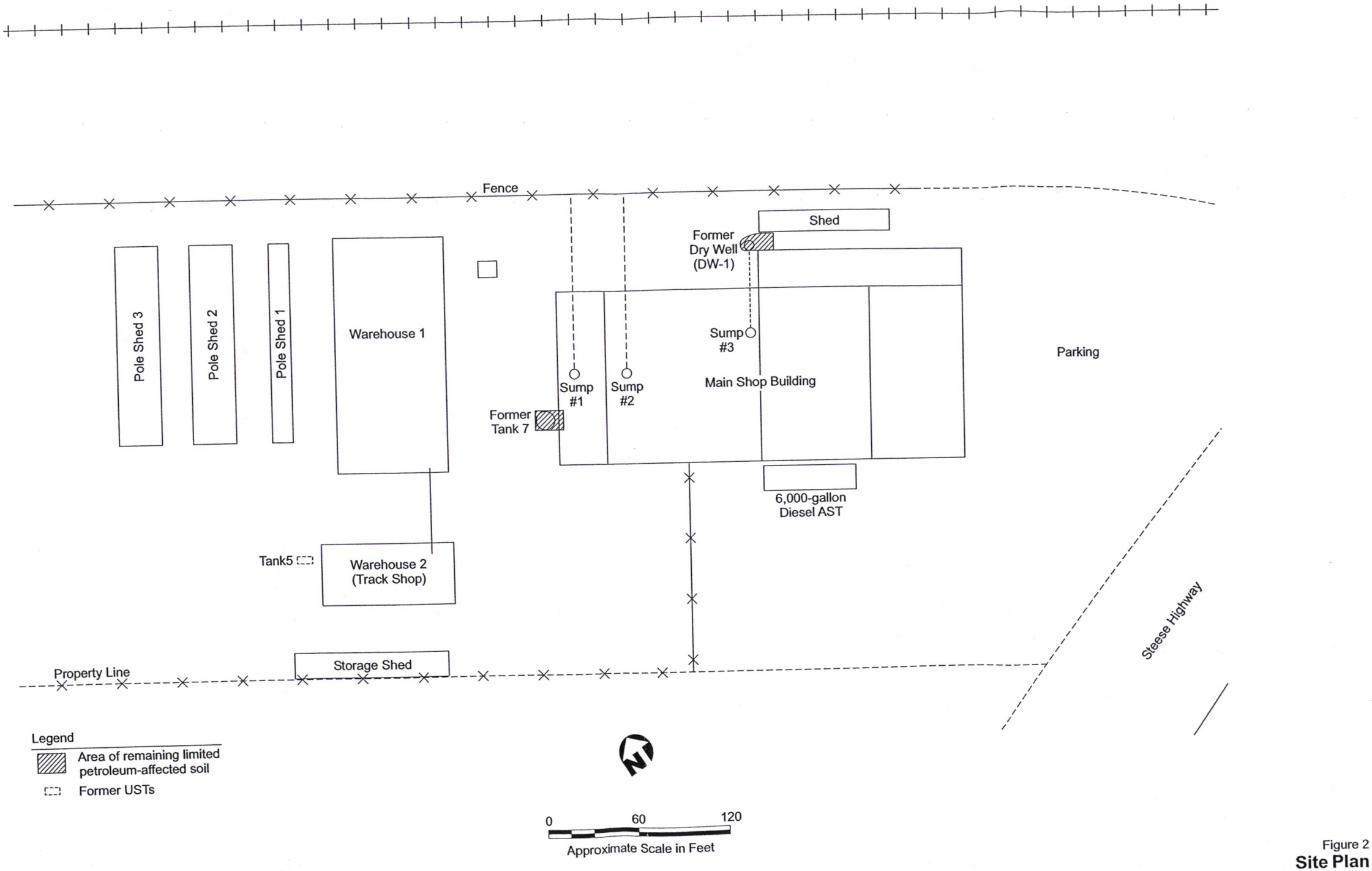

Figure 2
Site Plan

NC Machinery Co.
Fairbanks, Alaska

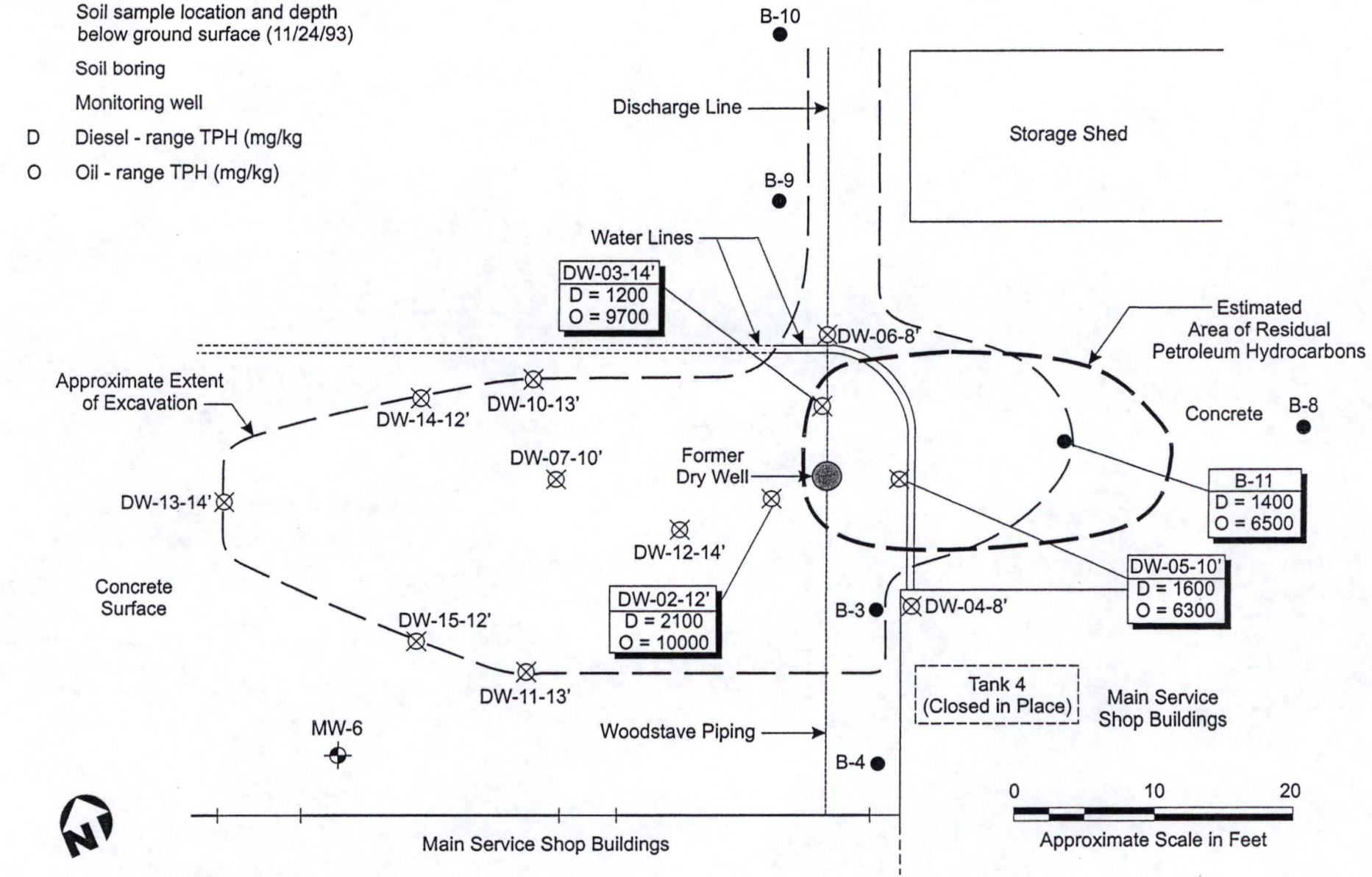

Figure 3

Estimated Area of Petroleum Affected Soils

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NC Machinery Co.
Fairbanks, Alaska

Table 1
Summary of Groundwater Petroleum Hydrocarbon Analytical Results
NC Machinery
Fairbanks, Alaska

Sample ID	Sample Date	Total Petroleum Hydrocarbons (mg/L)			Volatile Aromatic Compounds (mg/L) [1]			
		Gasoline-Range [1]	Diesel-Range [2]	Residual Oil-Range [3]	Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-1	03/25/93			0.2 U	0.001U	0.001U	0.001U	0.016
	05/03/93				0.001U	0.001U	0.001U	0.01
	06/09/93			0.9				
	07/01/93			**1.7**	0.001U	0.001U	0.001U	0.007
	07/29/93			**1.2**	0.001U	0.001U	0.001U	0.0078
	08/30/93			0.8	0.001	0.002	0.003	0.025
	12/03/93		**2.8**	**2**	0.001	0.002	0.001	0.023
	06/22/94		1.4	**5**	0.001 U	0.001	0.001 U	0.013
	09/29/94		**12**	**3.5**	0.002	0.001	0.001 U	0.01
	07/15/96		**2.2**	**4.1**	0.001 U	0.001	0.004	0.015
	10/17/96		**10**	**15**	0.001 U	0.002	0.001 U	0.017
	01/22/97		**7.2**	**13**	0.001 U	0.001	0.001 U	0.017
	04/09/97		**8.6**	**19**	0.001 U	0.001 U	0.001 U	0.009
	01/11/01	0.134	**6.3**	1.1	0.005 U	0.00547	0.002 U	0.0167
MW-2	03/25/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	05/03/93				0.001 U	0.001 U	0.001 U	0.001 U
	06/09/93			0.2 U				
	07/01/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	07/29/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	08/30/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	12/03/93		0.05 U	0.4	0.001 U	0.001 U	0.001 U	0.002 U
	03/30/94		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	06/22/94		0.08	0.6	0.001 U	0.001 U	0.001 U	0.004
	09/29/94		1.3	0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	07/15/96		0.17	1.0 U				
	10/15/96		0.25	1.0 U				
	01/21/97		0.24 U	1.0 U				
MW-3	03/25/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	05/03/93				0.001 U	0.001 U	0.001 U	0.001 U
	06/09/93			0.2 U				
	07/01/93			0.21	0.001 U	0.001 U	0.001 U	0.001 U
	07/29/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	08/30/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	12/03/93		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	03/30/94		0.05	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	06/22/94		0.22	**2**	0.001 U	0.001 U	0.001 U	0.002 U
	09/29/94		1.1	0.9	0.001 U	0.001 U	0.001 U	0.002 U
	07/15/96		0.41	1.0 U				
	10/17/96		0.52	**7.2**				
	01/21/97		0.66	1.0 U				
18 AAC 75 Table C Groundwater Cleanup Levels		1.3	1.5	1.1	0.005	1.0	0.7	10.0

Table 1
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NC Machinery
Fairbanks, Alaska

Sample ID	Sample Date	Total Petroleum Hydrocarbons (mg/L)			Volatile Aromatic Compounds (mg/L) [1]			
		Gasoline-Range [1]	Diesel-Range [2]	Residual Oil-Range [3]	Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-4	03/25/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	05/03/93				0.001 U	0.001 U	0.001 U	0.001 U
	06/09/93			0.2 U				
	07/01/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	07/29/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	12/03/93		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	09/29/94		1.1	0.2	0.001 U	0.001 U	0.001 U	0.002 U
	07/15/96		0.25	1.0 U				
	10/17/96		0.26U	1.0 U				
	01/22/97		0.64	1.0 U				
MW-5	08/30/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	12/06/93		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	03/30/94		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	06/22/94		0.1	0.2 U	0.001 U	0.001 U	0.001 U	0.002
	09/29/94		0.76	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	07/15/96		0.07	1.0 U				
	10/17/96		0.27 U	1.0 U				
	01/21/97		0.27 U	1.0 U				
MW-6	08/30/93			**1.5**	0.004	0.029	0.023	0.179
	12/06/93		**4.3**	**16**	**0.029**	0.15	0.007	0.087
	06/22/94		**3**	**7**	**0.03**	0.13	0.02	0.15
	09/29/94		**24**	**1.9**			0.02	0.25
	07/15/96		**17**	**18**	**0.015**	0.13	0.025	0.29
	10/17/96		**14**	**17**	**0.007**	0.13	0.025	0.28
	01/22/97		**26**	**3**	**0.008**	0.12	0.027	0.3
	04/09/97		0.53	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	01/11/01	0.69	**46.8**	**35.6**	0.0005	0.00631	0.00221	0.0315
MW-7	08/30/93			0.2 U	0.001 U	0.001 U	0.001 U	0.001 U
	12/03/93		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002
	03/30/94		0.05 U	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	06/22/94		0.05 U	0.5	0.001 U	0.001 U	0.001 U	0.002
	09/29/94		0.91	0.2 U	0.001 U	0.001 U	0.001 U	0.002
	07/15/96		0.33	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	10/17/96		0.26 U	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	01/21/97		0.91	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	04/09/97		0.91	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	01/11/01	0.09 U	0.538	0.532 U	0.005 U	0.002 U	0.002 U	0.002 U
18 AAC 75 Table C Groundwater Cleanup Levels		1.3	1.5	1.1	0.005	1.0	0.7	10.0

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MW-8	12/06/93		0.15	0.2 U	0.001 U	0.001 U	0.001 U	0.002 U
	03/30/94		0.05 U	0.2 U				
	09/29/94		**2.7**	**13**	0.001 U	0.001 U	0.001 U	0.001 U
	07/15/96		0.38	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	10/17/96		0.27 U	**2.6**	0.001 U	0.001 U	0.001 U	0.001 U
	01/21/97		0.26	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
	04/09/97		0.65	1.0 U	0.001 U	0.001 U	0.001 U	0.001 U
18 AAC 75 Table C Groundwater Cleanup Levels		1.3	1.5	1.1	0.005	1.0	0.7	10.0

Notes:
AAC = Alaska Administrative Code
U - Parameter was analyzed for, but not detected above the reporting limit shown.
[1] Samples analyzed using methods AK101 (for gasoline-range hydrocarbons) and 8021B (for volatile aromatic hydrocarbons).
[2] Samples analyzed using method AK102-DRO.
[3] Samples analyzed using EPA method 418.1.
[4] Samples analyzed using EPA method 1664.
[5] Samples analyzed using method AK 103-RRO.
Blank Cell - compound was not analyzed for.
Numbers in **bold** font indicate that the results exceed the 18 AAC 75 Table C Groundwater Cleanup Levels

Table 2
Summary of Groundwater Volatile Organic Compound Analytical Results
NC Machinery
Fairbanks, Alaska

Sample ID	Sample Date	Volatile Organic Compounds [1] (mg/L)												
		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	TCA	PCE	DCA	TCE	MEK	Naphthalene	Trichloro-fluoro-methane	1,3,5-Trimethyl-benzene	1,2,4-Trimethyl-benzene
MW-1	01/22/97	0.001U	0.001	0.001U	0.017	0.003	0.001U	0.001U	0.001U	0.001U				
	04/09/97	0.001U	0.001U	0.001U	0.009	0.001U	0.001U	0.001U	0.001U	0.001U				
	01/11/01	0.001 U	0.0012	0.001 U	0.01327	0.00176	0.001 U	0.001 U	0.001 U	0.0229	0.00379	0.00349	0.00597	0.00275
MW-6	01/22/97	**0.008**	0.12	0.027	0.3	0.001U	**0.038**	0.002	**0.009**	0.048				
	04/09/97	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U				
	1/11/01 [2]	0.001 U	0.00614	0.0022	0.0281	0.001 U	**0.0228**	0.001 U	0.00187	0.01	0.012	0.00142	0.0165	0.0185
MW-7	01/21/97	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U				
	04/09/97	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U	0.001U				
	01/11/01	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.01 U	0.001 U	0.00118	0.001 U	0.001 U
18 AAC 75.375, Table C Groundwater Cleanup Levels		0.005	1.0	0.7	10	0.005	0.005	0.005	0.005	NE	1.46	NE	NE	NE

Notes:
AAC = Alaska Administrative Code
U - Parameter was analyzed for, but not detected above the reporting limit shown.
NE = Not Established
[1] Samples analyzed using EPA method 8260B
[2] 4-isopropyltoluene (0.001 mg/L) and n-propylbenzene (0.00105 mg/L) were also detected in this sample. Neither compound is listed in 18 AAC 75.375, Table C
Blank Cell - compound was not analyzed for.
Numbers in bold font indicate that the results exceed the 18 AAC 75 Table C Groundwater Cleanup Levels

APPENDIX A

TERRA VAC PILOT STUDY
AND
FULL SCALE PROPOSAL

PILOT STUDY AND FULL-SCALE PROPOSAL

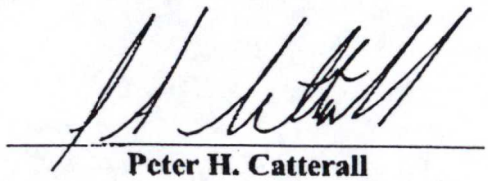
NC MACHINERY FACILITY
730 OLD STEESE HIGHWAY
FAIRBANKS, ALASKA

January 30, 2001

PREPARED FOR:

Mr. David Raubvogel
URS Consultants
500 Market Place Tower
2025 1st Avenue
Seattle, Washington 98121

PREPARED BY:



Peter H. Catterall
Project Environmental Scientist

Paul V. Bianco, P.E.
Senior Engineer

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[redacted]

Sincerely,

Terra Vac

Paul V. Bianco, P.E.
Senior Engineer

cc: 32.0037.01

(b) (4)

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[redacted]

Sincerely,

Terra Vac

Paul V. Bianco, P.E.
Senior Engineer

cc: 32.0037.01